Foldnak 80/100
Trimmer 100

Operations manual/
Service instruction

ENGLISH

Foldnak 80/100

Trimmer 100

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Safety precautions

1. Please read this instruction carefully and completely before operating the machine.

2. Please make sure the mains voltage is suitable and the outlet has a proper earth connection.

3. Repairs have to be carried out by trained Nagel technicians only.

4. Disconnect the machine from the mains while servicing it.

5. **Attention!** The Trimmer comprises a razor sharp knife which could cause severe injury. When removing a paper jam act with caution.

6. Use original Nagel consumables and spare parts only.

7. Lay the cables in a way that no dangers arise.

8. Install the machine in a dry room on leveled and solid ground. And within easy reach.

9. Block the breaks after putting the machines in place.

10. Safety precautions must not be removed or bypassed.

11. Replace fuses with the same type and rating.

12. Users with long hair need to keep safe distance to turning parts.

13. Close lids that they don't fall.

14. Don't open lid during operation this could cause paper jams.

15. Connect the machines with the provided screws. It is not allowed that they can be disconnected w/o tools.

16. Allow at least 20 seconds to pass between attempts to switch on the unit, otherwise the software may be damaged.

17. When changing plug connections, always switch off the machines!

18. Work careful at the leaf springs. They consist of thin sheet metal and could cause injury through incautious contact.

Important! Please pay attention

- change of paper format: see „paper format“, page 12.
- small formats: see „paper format“, page 12.
- clincher exchange: page 15.

Intended Use

Foldnak 80/100
Intended use is the stapling and folding of booklets within the in “Technical data” documented limits.

Trimmer 100
Intended use is the inline face trimming of booklets within the in “Technical details” documented limits.

Description and technical details

Foldnak 80/100
The Foldnak 80/100 is designed to make booklets.
The sheets to be used for it can be supplied as a collated set by hand or through a collator. Another option is to feed the Foldnak with single sheets through a RoboFeeder.
If you use thicker paper please keep in mind the physical limits. You might have to reduce the size of the stack. 2.5 mm equals 25 sheets of 80 gsm paper.

The Foldnak has four different processing methods:

- saddle stitching and fold
- block stitching
- block stitching and fold
- fold only, also asymmetric

Trimmer 100
The Trimmer can trim the inline face of booklets.

Technical data Foldnak 80/100

	Foldnak 100 Hohner	Foldnak 100 ISP	Foldnak 100 M2	Foldnak 80 Rapid
Max. output (cuts) per hour (depends on format)	3,000	3,000	3,000	2,500
Paper format max.	364 x 521 mm 14.33 x 20.50 inch	364 x 521 mm 14.33 x20.50 inch	364 x 521 mm 14.33 x20.50 inch	364 x 461 mm 14.33 x 18.15 inch
Paper format min. with 2 stapling heads	105 x 140 mm 4.14 x 5.5 inch	105 x 140 mm 4.14 x 5.5 inch	150 x 140 mm 5.90 x 5.5 inch	140 x 210 mm 5,5 x 8.27 inch
Max. height of stack (booklet)	2,5 mm/ 0.10 inch	2,5 mm/ 0.10 inch	2,5 mm/ 0.10 inch	2,5 mm/ 0.10 inch
Max height of stack (corner stitching)	3,0 mm/ 0.12 inch	3,0 mm/ 0.12 inch	3,0 mm/ 0.12 inch	3,0 mm/ 0.12 inch
Clincher	yes	yes	yes	yes
Possible stapling head (=SH) positions	any	with 4 SH 88.5-63-88.5 ; or with 2 SH 124 [mm]	any	any
Number of SH, standard (max.)	2 (4)	2 (4)	2 (4)	2 (4)
Staple types	wire	wire	26/6, 26/8 S, loop staple 26/6	cartridge
Loop staples	yes (optional)	no	yes	no
Capacity of staples	app. 65,000	app. 65,000	210	5,000
Delivery	yes	yes	yes	yes
Corner-/ block stitching	yes	yes	yes	yes
Infeed belts	yes	yes	yes	yes
Collator online	yes	yes	yes	yes
Integrated accumulating station	yes	yes	yes	yes
LCD Display	yes	yes	yes	yes
Trimmer online	yes	yes	yes	yes
Automatic jogger	yes	yes	yes	yes
Counter	yes	yes	yes	yes
Automatic triggering	yes	yes	yes	yes
Monitoring stock of staples	yes	yes	yes	yes
Power supply	230 V 50 Hz 0.8 kW or 115 V 60 Hz 0.8 kW	230 V 50 Hz 0.8 kW or 115 V 60 Hz 0.8 kW	230 V 50 Hz 0.8 kW or 115 V 60 Hz 0.8 kW	230 V 50 Hz 0.8 kW or 115 V 60 Hz 0.8 kW
Sound power level	< 75 dB(A) ± 5% with Trimmer	< 75 dB(A) ± 5% with Trimmer	< 75 dB(A) ± 5% with Trimmer	< 75 dB(A) ± 5% with Trimmer
Operating conditions	10 to 35 degree Celsius 35 to 85 % RH, non condensing	10 to 35 degree Celsius 35 to 85 % RH, non condensing	10 to 35 degree Celsius 35 to 85 % RH, non condensing	10 to 35 degree Celsius 35 to 85 % RH, non condensing
HxWxD (cm) not packed	without/with delivery 115x72x118/186	without /with delivery 115x72x118/186	without /with delivery 115x72x118/186	without /with delivery 115x72x118/186
Weight (kg)	230 not packed 260 packed	230 not packed 260 packed	230 not packed 260 packed	205 not packed 235 packed

Technical data Trimmer 100

Max. output (cuts) per hour:	3000/h
Max. booklet length, folded:	260.5 mm
Min. booklet length, folded:	74 mm
Max. cutting width (standard):	320 mm
Max. cutting width (longer knife):	364 mm
Max. height of stack:	60 sheets with 80 gsm
Max. trim margin:	15 mm
Adjustment of paper format:	fully automatic
Delivery:	yes
Waste monitoring:	yes
Power supply:	115 Volt 60 Hz 650 Watt, or 230 Volt 50 Hz 650 Watt
Sound power level:	< 75 dB(A) ± 5% with Foldnak
Operating conditions:	10 to 35 degree Celsius, 35 to 85 % RH, non condensing
HxWxD not packed (cm):	106 x 72 x 51/112 without/with delivery
Weight not packed:	160 kg
Weight packed:	180 kg

Installation and operation of Foldnak 80/100

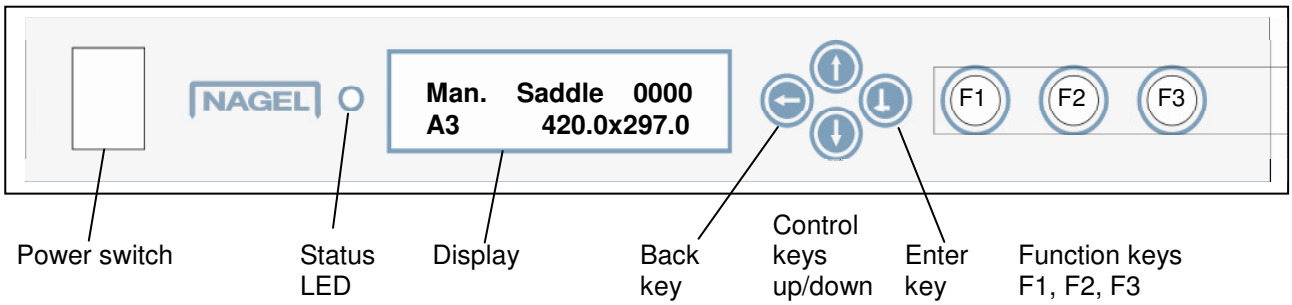
Preparation of the stapling heads: to avoid uncoiling or tangling up of the wire during transport, the wire was pinched off. That means only few stitches can be made until the wire is threaded again.

Both Foldnak and Trimmer have an additional mains switch close to the power inlet. If the machine is not in use for a longer period of time, please switch it off with this switch.

Welcome !!! **FK xxx TR yyy**

Shortly after switching the Foldnak on the display shows the loaded S/W version: xxx shows the Foldnak and yyy the Trimmer software version. This might be a helpful piece of information for your service technician.

After power up the display shows in the upper line the operation mode, the finishing mode and the counter. The lower line shows the name and the size of the selected format in inch or cm, e.g. A3 and 420.0 x 297.0.



The Foldnak 80/100 and a possibly connected Trimmer are controlled via the four control keys and the three function keys.

Main menu 0 **Paper format**

Paper format 0e **A3 420.0x297.0**

Please hit the enter key to go into the main menu. Scroll up and down with the two direction keys. The upper line shows the higher menu level permanently. The line underneath changes its contents and displays the submenus with every hit of a direction key. If you have reached the desired submenu, please hit the enter key again to select it. It is then displayed in the upper line.

The chapter “Menu table of Foldnak 80/100“ includes the complete structure, to make orientation within the menu easier. With the back key you can arrive at a higher level. This equals one column to the left in the menu table.
To ease repeated adjustments the Foldnak memorizes the last path in the menu. That means you can reach the same submenu through repeated pressing of the enter key.

Terminating plug
Depending on the configuration, that means which machines are assembled, the fitting terminating plug must be plugged in into the last element. For Foldnak and Trimmer plug with parts no. 2710198, for SP+ 2958571.

S8
Attention! S8 needs Software-Version 2.23 or higher to run at the Foldnak!

Sequence of switching on
First switch on the SP+ (if existing). Wait until the LED becomes green. Then the Trimmer can be switched on, then the Foldnak. For the RoboFeeder it is unimportant when it is powered up.

Settings of the function keys

The default settings of the function keys F1, F2, F3 are as follows:

F1 = Staple position
F2 = Fold position
F3 = Language

Each function key can be overwritten with a new function out of the menu table. In order to do this, go to the desired submenu and hold the function key which is supposed to be overwritten for more than 3 seconds. The LCD displays “function key stored”.
There is an option to replace the function key labels with customized ones. It should be done by trained personnel.

Maintenance and cleaning

If the clinchers or stapling heads (=SH) are polluted visibly, they need to be cleaned. At least:
at every **wire roller change** the clinchers and SH are to be cleaned, see SH-manual.
When changing the wire roller all further jobs required by the maker need to be carried out, like greasing and cleaning.

Remove regularly staple and paper remnants. They can cause troubles.

Menu table of Foldnak 80/100

0	1	2	3	4
Main Menu	Paper Format	? (e.g. after a change from inch to cm) metric/inch:		
		CD | CD		
		A5 | Statement (5.5x8.5 in)		
		A4 | Executive (7.25x10.5 in)		
		A3 | Letter (8.5x11 in)		
		A3+ | Legal (8.5x14 in)		
		SRA3 | Tabloid (11x17 in)		
		C1-mm | C1-inch		
		… (C2 to C4)		
		C5-mm | C5-inch		
	Adjust	Width +/-0.0 *		
		Length +/-0.0 *		
		Staple +/-0.0 *		
		Fold +/-0.0 *		
	Reset Counter	Sure?		
	Mode	S8		
		RoboFeeder		
		Manual-Start		
		Saddle		
		Block		
		Block+Fold		
		Fold only		
		Staple test		
	Delivery	Delay +/-00		
	Trimmer	Offset 00		
		Not connected		
		Bypass Mode		
		Trim Mode		
		SP+ in-line		
		Paper Stop 00		
	Settings	C-Formats (=Customized Formats)	C1-mm to C5-mm	Length 000.0 *
				Width 000.0 *
			C1-inch to C5-inch	Length 00.00 **
				Width 00.00 **
		Language	English	
			German	
			French	
			Spanish	
			Dutch	
			Italian	
		Dimension	metric	
			inch	
		Service 0000	Paper stop offset	T-Finger +/-0.0 *
				Side guide +/-0.0 *
				Staple Stop +/-0.0 *
				Fold Stop +/-0.0 *
				Staple Pos. +/-0.0 *
				Fold Pos. +/-0.0 *
			Total counter	0000000000
			Staple head	Wire
				Staples
				Rapid
			Actuators	FA1 to FA30
			Sensors	FS1 to FS41
			Actuat. Trimmer	TA1 to TA11
			Sensors Trimmer	TS1 to TS7
	Speed	Set: 0000		
	Clearing	booklet		
		open side guides		
		drop out		

display in inch:
see table below

* **display in mm**: 0.1 = 1/10 mm
display in inch: 01 = 1/256 inch

** 1.50 = 1 1/2 inch

Submenu 1

Paper format

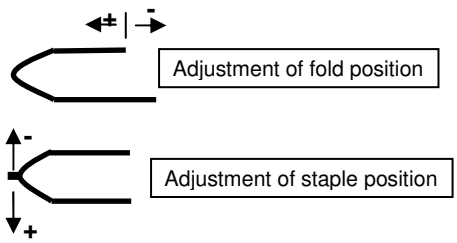
Attention! Before every change of format check stapling head position. Danger of collision!
Small format: remove leaf springs from the side guides! Below a width of 152mm with a stapling head distance of 75mm. After operating in small format reattach the **leaf springs** tight and parallel to the side guides.

Smallest format (A6): install the kit for the smallest format (A6), see the manual enclosed the kit.
Remove support plate of S 8, mount attachment infeed funnel and infeed funnel left and right.
Use the special paper downholders.

Predefined formats like A5, A4, A3 or customized C-formats are selectable. Inch formats like Statement, Executive, Letter, Legal and Tabloid are selectable after the dimensions have been changed from metric to inch.

Adjust	**1a**
Width	**+/-0.0**

Adjust
If you notice during the jogging procedure that the paper seems to bee too large or too small it is possible to adjust width and length of the format setting.



Staple and fold position are also adjustable.
You have to enter the deviation from the basic setting.
Adjust the +/- first by using the up/down keys and confirm it with the enter key. Search by using the up/down keys the correct value (for each digit) and confirm it with the enter key. The enter key moves the cursor one position to the right.
It is recommended first to adjust the position of the fold and then to adjust the position of the staples.

Reset Counter
After having confirmed the question “sure?” you can reset the batch counter.

Operation mode
Here you can set if the paper is coming from a S8, a RoboFeeder or is fed manually. Also the finishing mode of a booklet or a block is set in this submenu.

Delivery
In order to improve the booklet stream on the delivery the delay time of the delivery belts is adjustable.
The adjustment of the delivery in the menu is only possible, if the delivery is directly connected with the Foldnak. At the Trimmer it is adjustable with the potentiometer, at the SP+ it is not adjustable.

Trimmer

Offset (of cutting width)
Offset defines the width of the waste.

Trimmer modes
You can set a tick mark to tell the Foldnak that a Trimmer is connected. You can tell the machine the same way what is supposed to be done with the booklet. Not trimmed in the bypass mode or trimmed.

STOP-Pos.
The delay of the belts can be adjusted. This can be necessary if a booklet jumps back from the trim stop.

Settings Foldnak 80/100

Attention! Adjusting the Foldnak-parameter during operation may cause disruptions!

Customized Formats (C-Formats)
Definition of customized formats. Minimal: 105 x 140/ 4.14 x 5.50, Maximal: 364 x 521/ 14.33 x 20.50 resp. 461/ 18.15 [mm/inch]. Choose a C-Format and press enter twice. Search by using the up/down keys the correct value (for each digit) and confirm it with the enter key. If the length is choosen, it jumps to the menu item width. Finish it with the back key. To select a customized format it needs to be choosen in the paper format menu. See paragraph “paper format”. Check stapling head position!

Language
The selection of different languages is possible.

Dimensions
Here you can change from metric to imperial dimensions. The display will show a question mark after a change. It means you need to choose a paper format. There is a differentiation between fine and rough adjustment. In the menutable it is marked with one * and two ** asterics. In the fine adjustment means 0.1 = 1/256 inch, rough adjustment means 01 = 1 inch. See little table below the menu table.

Service
This part is password protected and meant for the use of service technicians only. Attempting to perform repair and replacement procedures w/o proper training may cause machine damage or operator injury.

Speed
The speed of the Foldnak can be set for **S8-operation** (sets per hour):

S8:	continuous	
with SP+:	1,000	compulsory (will be improved)
slow:	500-1,100 / 1,000	range / recommended initial value
medium:	1,200-1,800 / 1,600	range / recommended initial value
fast:	1,900-3,000 / 2,300	range FK100 / recommended initial value
	2,000-2,500 / 2,300	range FK80/ recommended initial value

It is recommended to start e.g. in the medium speed with the initial value of 1,600 and than to increase it.

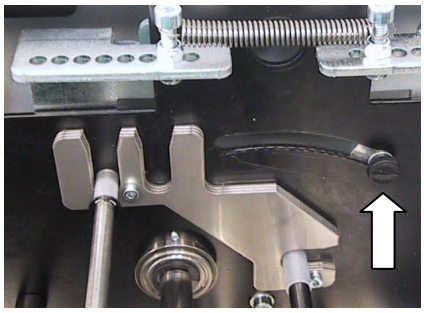
Speed of the Foldnak, **RF-operation** (sheets/hour):

slow and medium:	up to 6,000
fast:	above 6,000

The maximum of the FK depends on paper type and format and amout of pages of the booklets.

Clearing
There are three choices: a) booklet, that means stitch and fold, b) open the side guide and c) eject, that means only folding.
If an error occurs, the Foldnak jumps automatically to this menu item.

Additional mechanical corrections at the Foldnak
The clearance between the fold rollers can be adjusted w/o tools. The knurled screw needs to be loosened, see arrow in the picture. For sensitive paper rather set a wider clearance, that means to turn the screw in the direction of the infeed. It is important to set the lever on both sides similar.
The pressure of the fold rollers can be reduced for sensitive paper. And it can be set subtler by using a weaker spring. The pressure must not be increased, because a thicker booklet may not pass the fold rollers.

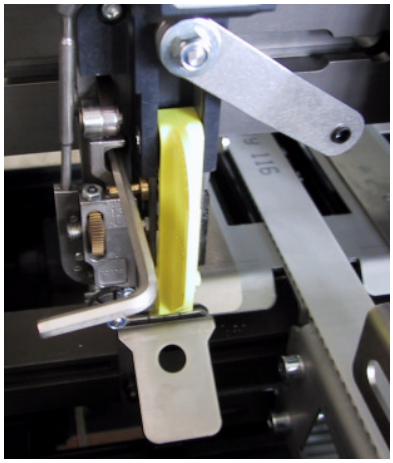


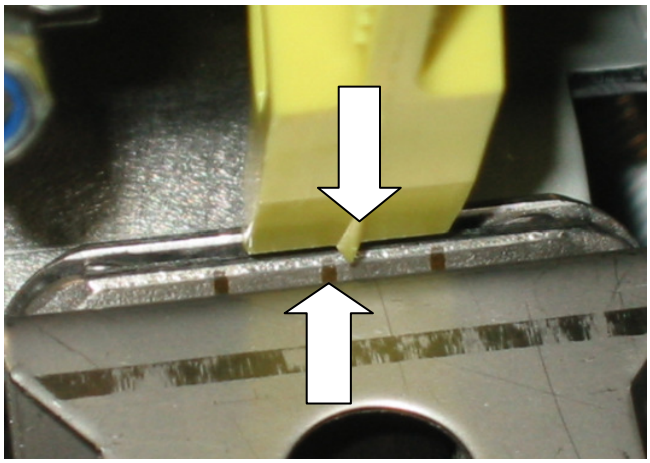
Different stapling heads

The stapling heads (except ISP) can be put in in any position. But they can cause problems in the area of the folding knife finger. That is in the range between 94 to 110 mm and 244 to 260 mm.
Please read the manufacturers handbook carefully. You get hints on feeding the stitch wire into the head, preventive maintenance and repair. In the case of a malfunction, please call your Nagel dealer.

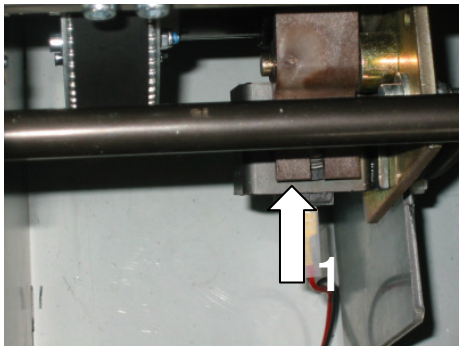
For small formats: remove leaf springs! Below a width of 152 mm with a stapling head distance of 75 mm.

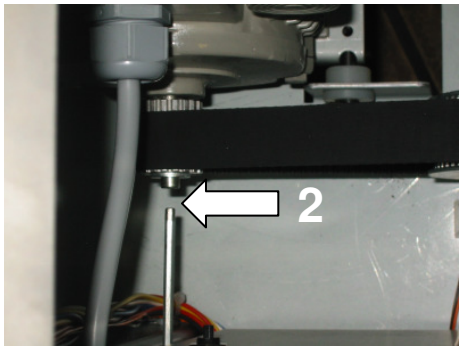
Hohner
Please use wire #25, order no. 6170110. **Stapling head:** order no. 2660223.
The clinchers (lower arrow) can be adjusted with the alignment tool (upper arrow) to the stapling heads. For this purpose turn the leaf spring sideways (left photo), take out the former and insert the alignment tool. Now you can move the clincher sideways, until the marking in the middle aligns with the nose.

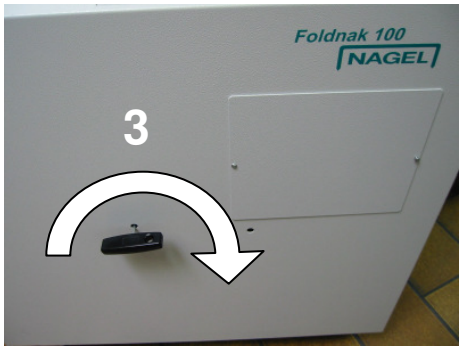




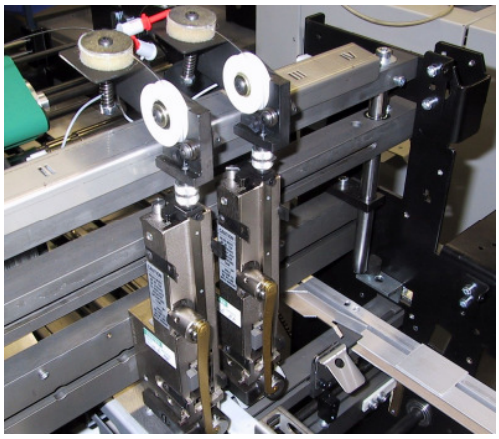
The stapling head can be **aligned through lowering**. The machine must be switched off. Disconnect manually the stapling head clutch. For this purpose open the little lid and push at the place which is marked with arrow 1 in the picture below. Put an Allen key 4 mm as shown with arrow 2 into the motor shaft and turn the hexagon socket screw clockwise (arrow 3). After the adjustment turn it further until the stapling head clutch opens again. The stapling heads are now at the top dead center.



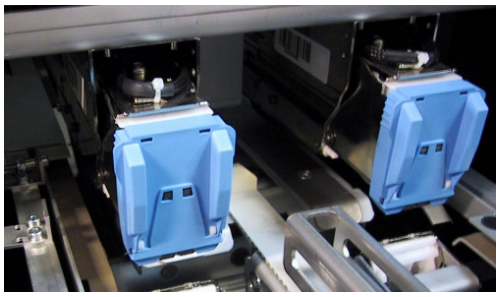




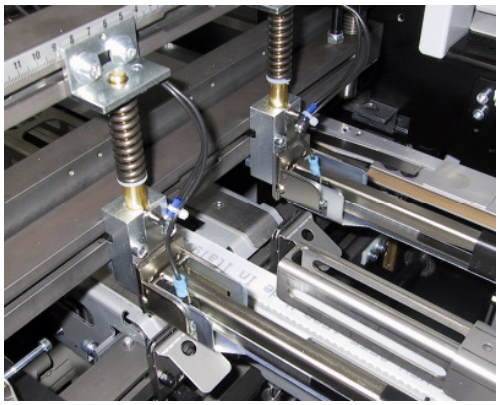
ISP Stitching & Bindery Products
The stapling heads have fixed positions. The clincher can be easily aligned to the stapling head by lowering them, see Hohner stapling heads.
Please use wire #25, order no. 6170110.
Stapling head: order no. 2660225.



Rapid
For adjusting the distance unscrew the 4 hexagon socket screws with SW 3 and move the stapling head to the required position.
Loosen the knurled screw of the clincher and align the clincher.
Please use only Nagel cartridges with the order no 2660800.
Stapling head: order no. 2660801.

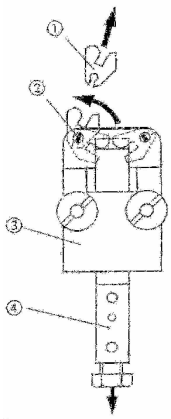


Nagel
Alignment of the clinchers as described above with lowered stapling heads.
For simple and precise adjustment of the 80 mm distance between 2 Nagel-SH's it is recommended to use the **alignment tool Nagel SH**. Also it can be used for aligning clincher to stapling head, for all distances.
Alignment tool Nagel SH: 2660199.



Please use original Nagel staples with the order numbers:
26/6: 627 2060
26/8S: 627 2081
Ri 26/6: 627 4062

Stapling head (complete): order no. 2660100,
assembly stapling head without adapter FK 100: 2660106.



Adjusting the stapling head
For the adjustment of the SH also the wire rollers must be aligned with the stapling heads. It can be enough to turn the wire guides.

Clincher exchange (except at Rapid-SH)
See SH-manual. Draw out the clincher pusher (4) downward, turn clincher (1) in clincher box (3) up and draw out of the holding pin (2). Push new clincher in the holding pin and turn it to the clincher box center. Reinsert clincher pusher.
Attention! When inserting the clincher pusher it must go into the slot of the clincher. If the clincher pusher remains under the clincher it destroys the clincher during operation.

Selection of staples and driver blade

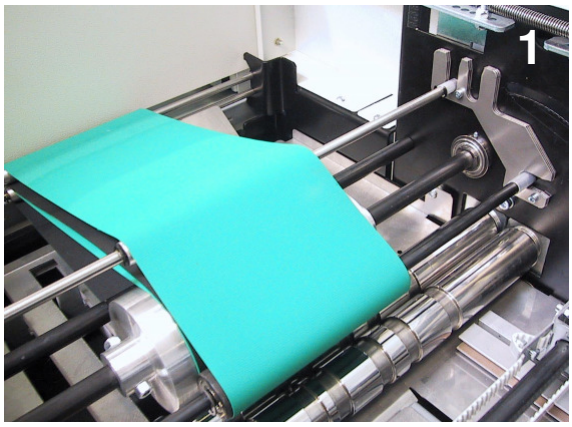
For very hard sheets or thick paper blocks (above 15 sheets 80 gsm) it is recommended to use 26/8S staples and the flat driver blade.

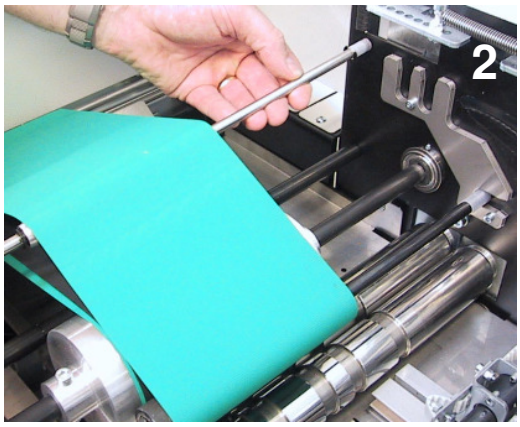
Change from flat to loop staples

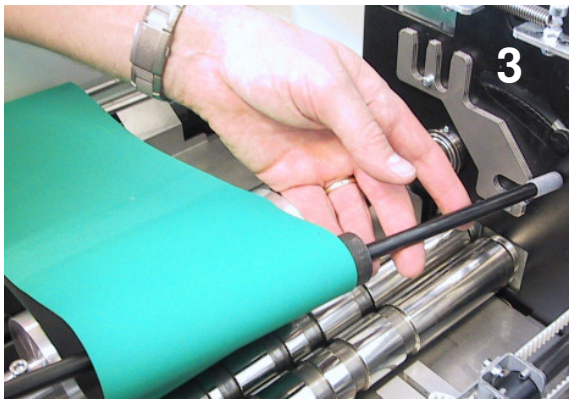
To change from flat staples to loop staples the driver needs to be exchanged, if the flat driver blade is installed. See SH-change (Hohner: page 14, Nagel: page 18).
For a **change from loop staples to flat staples** the driver doesn't need to be exchanged, unless very hard sheets or thick paper blocks are processed (above 15 sheets 80 gsm).

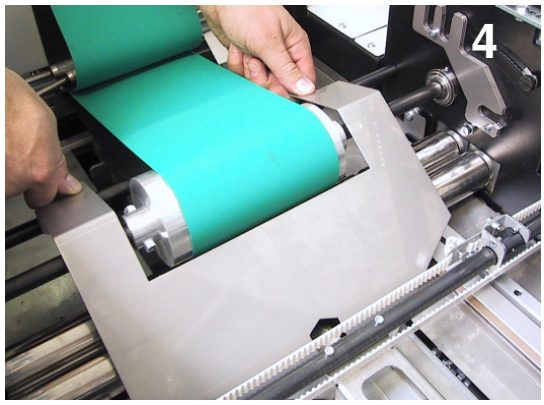
Block stapling

The paper block is jogged against the staple stop when block stapling. That means the unstapled side of the block is the leading edge. Please consider this orientation, when loading the collator.
A sheet metal ramp which guides the block into the transport belt after the fold rollers needs to be installed. The side guides are opened automatically in order to allow the block to be deflected into the transport belt.
To insert the ramp remove the upper belt (fig. 2 and 3), then insert the ramp with both narrow guide fingers in the table. Push the ends down (fig.4). After finishing, put the belt back in its place.









Error messages

In case of an error you have four options, described in the menu item ”clearing” in the chapter “Settings” (p.13). Each error message has to be confirmed by pressing the Backspace key.

DOOR OPEN
Close the door.

CHECK --- >
See feeder e.g. S8 or RoboFeeder.

ERROR home position
Check if paper remainder is in the machine. Remove it. Check slotted optical sensor home position of stitching and fold stops FS27 and FS8. Check if spindles of staple stop and fold stop run smoothly. Check encoder FS32, FS33 and slotted optical sensor of the side guide.

ERROR pos. T.-Finger (=position transport finger)
Check Encoder FS30 and FS31 and slotted optical sensor FS25.

COLLISION S.H. change papersize! (collision stapling head - change paper format)
Decrease stapling head distance.

ERROR pos. staple stop
Check FS27, check if spindle runs smoothly.

ERROR pos. fold stop
Check FS28, check if spindle runs smoothly.

ERROR ref. T.-Finger (reference transport finger)
Check FS25, encoder FS30 and FS31. Check if delivery belt runs smoothly.

ERROR ref. side guide
Check FS26, encoder FS32 and FS33. Check if side guides run smoothly.

ERROR ref. staple stop
Check FS27. Check if spindle runs smoothly.

ERROR ref. fold stop
Check FS28. Check if spindle runs smoothly.

PAPER JAM infeed
Check speed of belt of S8 and RoboFeeder. The desired value amounts 60m/min.
Check the slotted optical sensor FS1.

PAPER JAM not at foldstop
The sheets didn’t leave sensor FS4. Check T-Finger.

ERROR Trimmer/ SP+
Paper jam at the Trimmer, or waste drawer is full.

STAPLES empty !!!
Refill it.

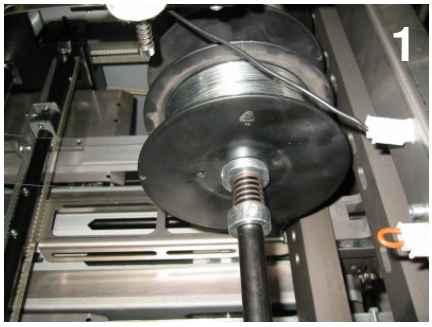
TRIMMER not connected!
Check connection.

ERROR folding
Sheets didn’t leave sensor FS4. Check clutch FA4.

ERROR feed slower!
Reduce the speed of S8/ RoboFeeder. Maybe in the Trimmer menu “SP+ in line” is choosen wrongly.

Paper too long for Block-mode
Not possible with this size.

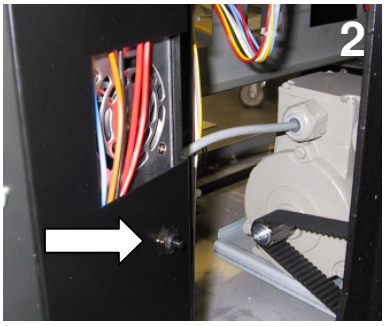
Functional Errors / SH Exchange



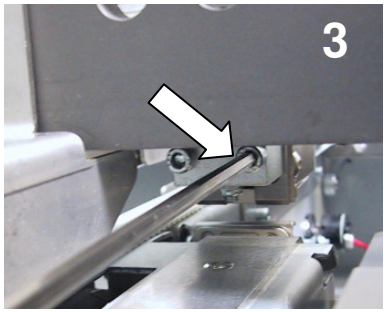
The wire uncoils too fast
Tighten the spring with the adjusting ring (fig.1).

Paper jam at the Foldnak infeed
Possible reasons: The speed of the belt of the RF/S8 is too fast. The desired value of the belt amounts 60 m/min.
The alignment of the machines is too inexact.
The lateral format rods in the RF/S8 are too wide open.

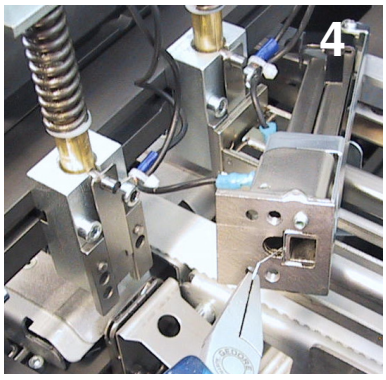
Paper jam
Attention! Don't move the **side guides** by hand, they can be damaged.
In case of paper jam always empty via the menu (clearing).



Reset the over current fuse / also Trimmer
After a jam or a power outage it could be that the starting torque of the main motor is insufficient to start against a closed wrap spring clutch. The stapling heads and folding knife (Trimmer: knife bar) are not in their home position.
The over current fuse could will interrupt the power in order to protect the stalled motor.
First return the stapling heads and knife to their home positions (page 14, fig. 2 & 3), use the provided long Allen key. Open the main cover. Then reset the fuse (fig.2, arrow) through pushing it.

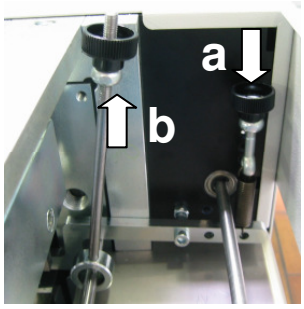


Reset to factory settings
Hold function key #3 for more than 3 seconds upon power up of the machine. The memory of the Foldnak will be over written with the factory settings.
Attention! You will lose your customized formats and settings. You have to select language and type of stapling head again. Default language = English. Default stapling head = Nagel.



Exchange Nagel-stapling head / remove jammed staples
Switch the machine off. Remove all staples. Disconnect the SH clutch manually (page 14, fig.1). Put the long Allen key through the opening in the front casing into the motor shaft (page 14, fig.2 & 3). Turn it clockwise until the SH bar is approx. in the middle. Unfasten the SH from the back with the long Allen key (fig.3). Remove jammed staples (fig.4).
Mounting of Stapling head (SH)
Attach the driver in the right direction: the number must be visible.
Assemble the SH from the back. Turn the SH bar to the top with the long Allen key. Insert staples. Accomplish the stapling head functional test.

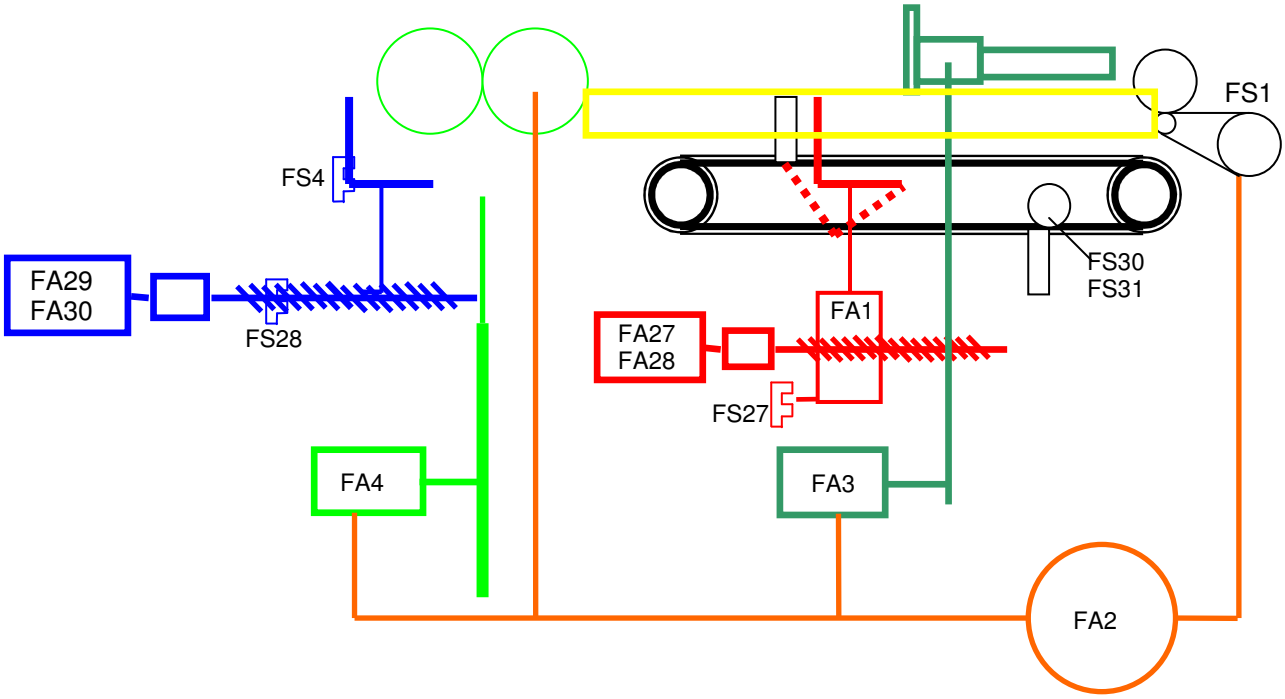
Nagel stapling head functional test
Push the spring of the SH down. Each time a staple must fall out.



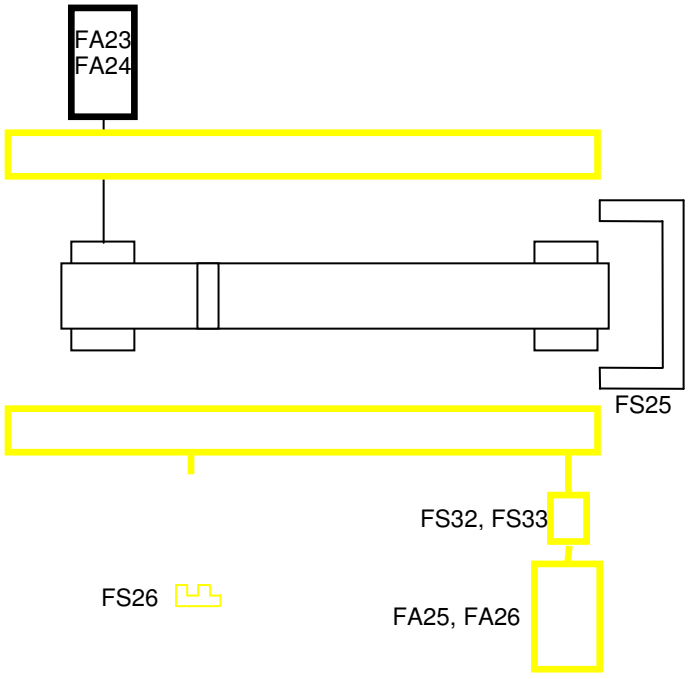
Booklet shears at the stitching
If very thick booklets with glossy cover sheets shear at the staples, you can turn the 2 knurled screws (a) anti-clockwise to reduce the pressure. If it doesn't help the 2 knurled screws (b) can be turned clockwise to lift the infeed belt.
The 2 knurled screws of each pair should be turned approximately the same.

Layout of Foldnak 80/100

Side view



Top view



Sequence description of the Foldnak 80/100

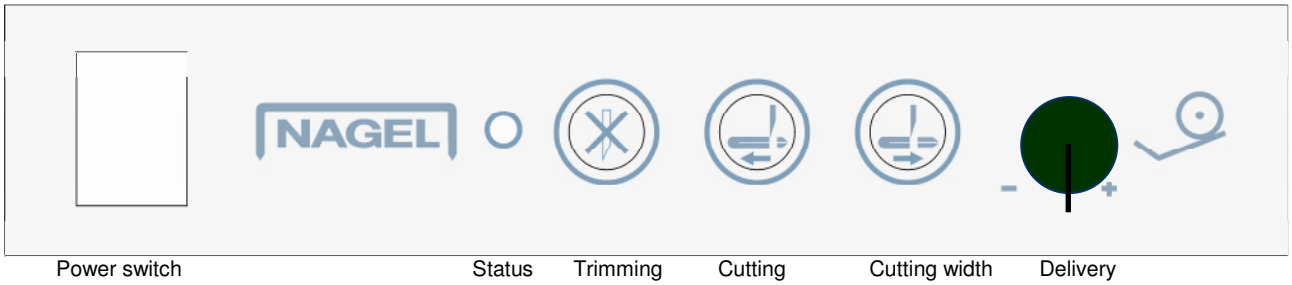
After power up, the Foldnak references its stops and guides. Staple stop, fold stop and side guides are moved to their outermost position until they reach the slotted optical sensors. The stepper motors are reversed until the desired format is reached. The accurate position is controlled by encoders.

The main motor will be started via the solid state relays FA2 after the Foldnak has received a start signal. The infeed rollers, fold rollers are turning. At the same time the solenoid of the staple stop is activated. The stop is in its upper position.

As soon as the infeed sensor FS1 detects the trailing edge of an incoming stack of paper, the transport finger is started. This will drive the stack against the staple stop. The exact position of the finger is controlled by encoder FS32/33. Depending on the selected speed the set is jogged once or several times through opening and closing of side guides and T-Finger. During folding the side guides are moving to the set width of the format. The stapling stroke is triggered by wrap spring clutch FA3. The side guides are opened. The staple stop is deactivated. The transport finger transports the stack from the stapling to the fold position. The accuracy is controlled by encoder FS32/3. The side guides are closed. Wrap spring clutch FA4 triggers a fold stroke, after the slotted optical sensor FS4 has detected that the fold position is reached.

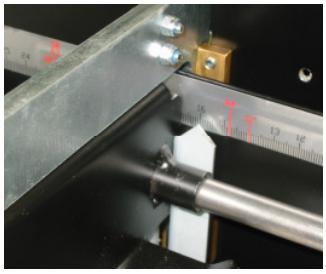
To the RoboFeeder operation
In the **accumulation mode** the transport finger is in front of the stack and drives the sheets against the back stop. After the last sheet has been accumulated the direction of the finger is reversed and the stack moved towards the staple stop.

Operation of Trimmer 100



Power switch | Status LED | Trimming On-Off and Reset | Cutting width bigger | Cutting width smaller | Delivery potentiometer

The Trimmer is mainly controlled from the Foldnak. The cutting width can be either changed from the Trimmer or the Foldnak. The set value can be read off at the back of the Trimmer.



Adjustments of the Trimmer in the Foldnak menu

Setting up the cutting width
The width of cutting can be chosen.

Trimmer modes
Through ticking off in the menu the Foldnak receives the information, whether a Trimmer is present, whether the booklet should only pass through or if it should be trimmed.

Stop-Pos.
The delay of the belts can be adjusted. This can become necessary if a booklet jumps back from the side guide.
Please keep in mind: at a high speed a too big delay can cause paper jam.
For thin booklets with sensitive sheets the delay should be minimal.

Trimmer errors

In case of a disruption the red LED gleams. After fixing the problem it must be confirmed by pressing the bypass-key (=Trimming OFF).

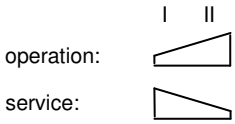
Waste drawer full
Empty the drawer. Then confirm the error.

Poor cutting quality
If the knife is dull the lower sheets can be pulled into the cutting clearance. Similar symptoms arise if the cutting clearance is too little.
Solution: sharpen the knife respectively increase the cutting clearance.

Booklets are not cut through
If the knife stops during cutting, proceed as described:
Toggle the service switch in the Trimmer. It is difficult to reach and therefore this must be done by a service-technician. Insert an Allen key 4 mm from the back into the motor shaft. Turn it clockwise, until the booklet is cut through and the knife is again in the top dead center position. Remove the Allen key. Toggle the service switch.

Knife doesn't reach the TDC
The reason can be a dull knife, a power failure, or another disruption.
Let a technician bring the knife to the TDC, as described above.

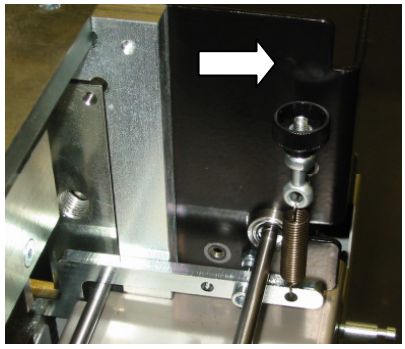
Knife doesn't stop at the TDC (runs continuously)
Check whether the service switch is still active (after a repair).



Main motor doesn't run
If the motor is blocked the motor overload switch activates. It is at the paper outlet side of the Trimmer. It can be reset by pressing.

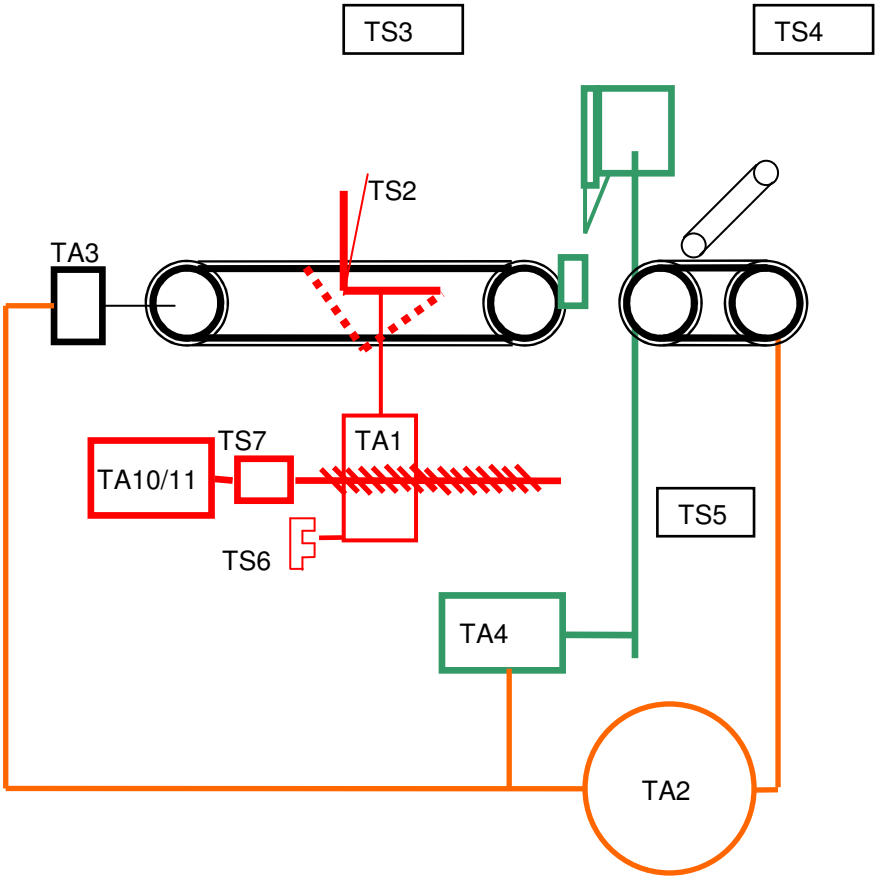
Further possible mechanical adjustments at the Trimmer 100

The pressure on the outfit belt can be raised by turning the two black knurled screws (see arrow) clockwise. It can be necessary for thick booklets or a glossy front sheet.
For sensitive sheets it is recommended to lower it.



Layout of Trimmer 100

Side view



Sequence of Trimmer 100

It is important to switch on the Trimmer first. This allows the Foldnak to recognize it. Double check in the Foldnak menu, that the Trimmer is selected.
After being switched on the Trimmer is referencing the booklet stop. The stop is moved to its outermost position until it reaches the slotted optical sensor TS6. The gear motor TA10/11 is reversed until the desired format is reached. The accurate position is controlled by the encoder TS7.

The main motor will be started via the solid state relays TA2 after the Trimmer has received a start signal from the Foldnak. The infeed belts are turning. At the same time the solenoid TA1 of the booklet stop is activated. The stop is now in its upper position.
The clutch TA3 of the out feed belt is started as well.

As soon as both switches TS2 at the booklet stop are closed the out feed belt TA3 is stopped and a knife stroke is triggered via wrap spring clutch TA4.

The knife has almost returned to its upper position (TDC) when it deactivates the paper stop solenoid TA1 and starts the out feed belt TA3 via the slotted optical sensor TS4.
The booklet is then transported onto the delivery TA5.
An optical sensor TS3 controls the exit of the Trimmer.

An additional optical sensor TS5 controls the height of the waste in the waste paper drawer.

Service

It is possible to check every actuator and sensor from the service submenu.

Submenu Foldnak Actuators

		Description	Connector on PCB	Pins Signal
FA1	SOLENOID	Solenoid Staple stop	J18	1: GND; 5: 24 V
FA2	MAIN MOTOR	Main motor via SSR	J18	2: GND; 6: 24 V
FA3	STAPLE	Clutch CB6 Stapling	J18	3: GND; 7: 24 V
FA4	FOLD	Clutch CB5 Folding	J18	4: GND; 8: 24 V
FA5	AUX1 ERR S8	Error FK at S8	J19	1: GND; 9: 24 V
FA6	AUX2	Input sensor at S8	J19	2: GND; 10: 24 V
FA7	AUX3	Trimmer error at S8	J19	3: GND; 11: 24 V
FA8	AUX4	--	J19	
FA9	AUX5	--	J19	
FA10	AUX6	--	J19	
FA11	AUX7	--	J19	
FA12	DELIVERY	Delivery	J19	8: GND; 16: 24 V
FA13	RELAY 1			
FA14	RELAY 2			
FA15	ERROR LED	Error LED	J20	1: GND; 2: 3 V
FA16	GREEN LED	Error LED	J20	3: GND; 4: 3 V
FA17	LED3	Error LED	J20	5: GND; 6: 3 V
FA18	LED4	Error LED	J20	7: GND; 8: 3 V
FA19	LED5	Error LED	J20	9: GND; 10: 3 V
FA20	LED6	Error LED	J20	11: GND; 12: 3 V
FA21	LED7	Error LED	J20	13: GND; 14: 3 V
FA22	LED8	Error LED	J20	15: GND; 16: 3 V
FA23	FINGER FORW.			1, 11 coil 1; 2, 12 coil 2
FA24	FINGER BACKW.			
FA25	SIDEGUIDE CLOSE			3, 13 coil 1; 4, 14 coil 2
FA26	SIDEGUIDE OPEN			
FA27	STAPLEPOS CLOSE			5, 15 coil 1; 6, 16 coil 2
FA28	STAPLE POS OPEN			
FA29	FOLD POS CLOSE			7, 17 coil 1; 8, 18 coil 2
FA30	FOLD POS OPEN			
FA31	ENDURANCE RUN	Continuous run		--

GND = Ground
SSR = Solid state relay

Submenu Foldnak Sensors

		Description	Connector on PCB	Pins Signal
FS1	INPUT		J29	1: Collector IR-Transistor; 4: Anode IR-LED; 2,3: GND
FS2	OPTICAL SENSOR		J29	--
FS3	STAPLE POS		J29	--
FS4	FOLD POS		J29	16: V_{CC}; 18: V_0; 20: GND
FS5	AUX1 S8 START		J22	1: high; 2: low (24 V)
FS6	AUX2 S8 ERROR		J22	3: high; 4: low (24 V)
FS7	AUX3		J22	
FS8	AUX4		J22	
FS9	AUX5 TP ERROR	Trimmer/SP+	J22	10: 24 V
FS10	DOOR 24V		J22	12: 24 V
FS11	AUX7		J22	
FS12	AUX8		J22	
FS13	BUTTON 1		J21	1: Make-contact to pin 2 (GND)
FS14	BUTTON 2		J21	3: Make-contact to pin 4 (GND)
FS15	BUTTON 3		J21	5: Make-contact to pin 6 (GND)
FS16	BUTTON 4		J21	7: Make-contact to pin 8 (GND)
FS17	BUTTON 5		J21	9: Make-contact to pin 10 (GND)
FS18	BUTTON 6		J21	11: Make-contact to pin 12 (GND)
FS19	BUTTON 7		J21	13: Make-contact to pin 14 (GND)
FS20	BUTTON 8		J21	15: Make-contact to pin 16 (GND)
FS21	STAPLE 1	Staples empty	J26	1: Make-contact to pin 5 (GND)
FS22	STAPLE 2	Staples empty	J26	2: Make-contact to pin 6 (GND)
FS23	STAPLE 3	Staples empty	J26	3: Make-contact to pin 7 (GND)
FS24	STAPLE 4	Staples empty	J26	4: Make-contact to pin 8 (GND)
FS25	REF. FINGER		J27	1: Collector IR-Trans.; 2,3: GND; 4 Anode IR-LED
FS26	REF. SIDEGUIDE		J27	6: V_{CC}; 8:GND; 10: V_0
FS27	REF. STAPLE		J27	12: V_{CC}; 14:GND; 16: V_0
FS28	REF. FOLD		J27	18: V_{CC}; 20:GND; 22: V_0
FS29	DOOR CONTACT		J28	3: Make-contact to pin 4 (GND)
FS30	ENC.T-FINGER A		J1	1: V_{CC}; 2: V_{01} 3: V_{02}; 4: GND
FS31	ENC.T-FINGER B		J1	
FS32	ENC.SIDEGUIDE A		J2	1: V_{CC}; 3: V_{01} 2: V_{02}; 4: GND
FS33	ENC.SIDEGUIDE B		J2	
FS34	ENCODER 3 A		--	--
FS35	ENCODER 3 B		--	--
FS36	ENCODER 4 A		--	--
FS37	ENCODER 4 B		--	--
FS38	ENCODER 5 A		--	--
FS39	ENCODER 5 B		--	--
FS40	ENCODER 6 A		--	--
FS41	ENCODER 6 B		--	--

IR = Infrared
Trans. = Transistor

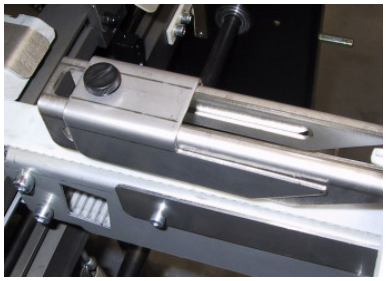
Submenu Trimmer Actuators

		Description	Connector on PCB	Pins Signal
TA1	PAPER STOP	Solenoid	J18	1: GND; 5: 24 V
TA2	MAIN MOTOR	SSR	J18	2: GND; 6: 24 V
TA3	OUTPUT BELT		J18	3: GND; 7: 24 V
TA4	TRIM STOKE		J18	4: GND; 8: 24 V
TA5	DELIVERY		J19	8: GND; 16: 24 V
TA6	ERROR RELAY 1		J9	1: Make-contact to pin 5 (GND)
TA7	ERROR RELAY 2		J9	2: Make-contact to pin 6 (GND)
TA8	ERROR LED		J20	1: GND; 2: 3 V
TA9	GREEN LED		J20	3: GND; 4: 3 V
TA10	PAPERSTOP large	Gear motor	J9	3: +24 V; 7: -24 V
TA11	PAPERSTOP small	Gear motor	J9	3: -24 V; 7: +24 V

Submenu Trimmer Sensors

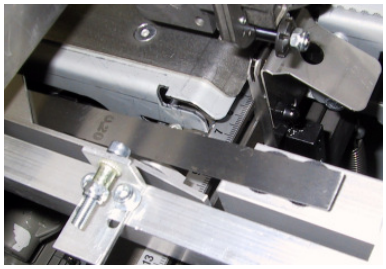
		Description	Connector on PCB	Pins Signal
TS1	OFFLINE-START		J22	7: 24 V; 8: GND
TS2	PAPER STOP		J27	22: Make-contact to pin 20 (GND)
TS3	OUTPUT IR-LED		J27	1: Collector IR-Trans.; 2,3: GND; 4: Anode IR-LED
TS4	KNIFE TOP POS.		J27	6: V_{CC}; 8: GND; 10: V_0
TS5	WASTE FULL		J29	17, 19: 24 V; 18: V_0; 20: GND
TS6	REF. FORMAT		J27	12: V_{CC}; 14: GND; 16: V_0
TS7	ENCODER		J1	1: V_{CC}; 2: V_{01}; 3: V_{02}; 4: GND

Accessories



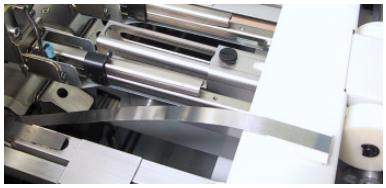
Downholder attachment, FK 80 and 100:
parts no. 2660389.

The attachment serves to hold the paper down, if the pile fans out too much and therefore doesn't enter straight.



Leaf spring FK 100: parts no. 2660392.
Leaf spring FK 80: parts no. 2660393.

The leaf springs prevent paper jam in the cut-outs. The cut-outs are necessary for little formats.



Leaf spring RoboFeeder at the Foldnak:
parts no. 2760832.

For RF-operation at a high number of sheets with high feeding speed.
(> 5.000 sheets/hour).

Loop driver blade for Nagel-SH: for loop and flat staples. Up to 15 sheets or until the staples bend.
Parts no. 2958418.

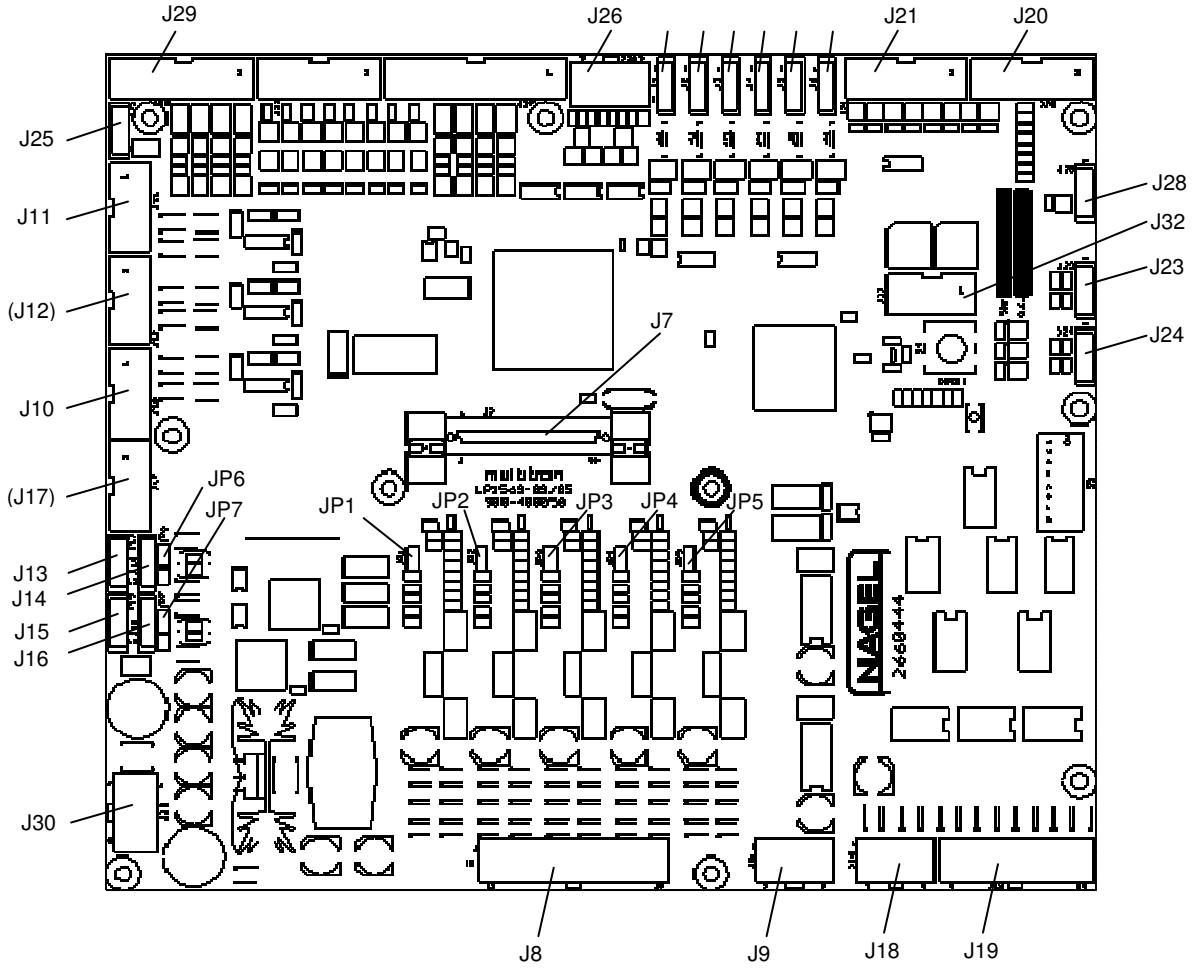
Flat driver blade for Nagel-SH: for flat staples. Recommendable for very hard sheets and thick paper blocks (above 15 sheets 80 gsm). Parts no. 2660256.

Stapling heads and staples
Hohner: wire #25. Order no. 6170110. **Stapling head:** order no. 2660223.
ISP Stitching & Bindery Products: wire #25. Order no. 6170110. **Stapling head:** order no. 2660225.
Rapid: Nagel-cartridge. Order no. 2660800. **Stapling head:** order no. 2660801.
Nagel-staples order no's:
26/6: 627 2060
26/8S: 627 2081 for very hard sheets or thick paper blocks (above 15 sheets 80 gsm)
Ri 26/6: 627 4062 (=loop staples).
Nagel stapling head M2 (complete): order no. 2660100,
assembly stapling head M2 without adapter for FK 100: 2660106.

Alignment tool Nagel SH: 2660199.
For simple and precise adjustment of the 80 mm distance between 2 Nagel-SH's. And for aligning clincher to stapling head, for all distances.

Parts for change to smallest format A6
Infeed funnel for small formats right: 2660750, infeed funnel for small formats left: 2660751,
fastener infeed funnel: 2660752.

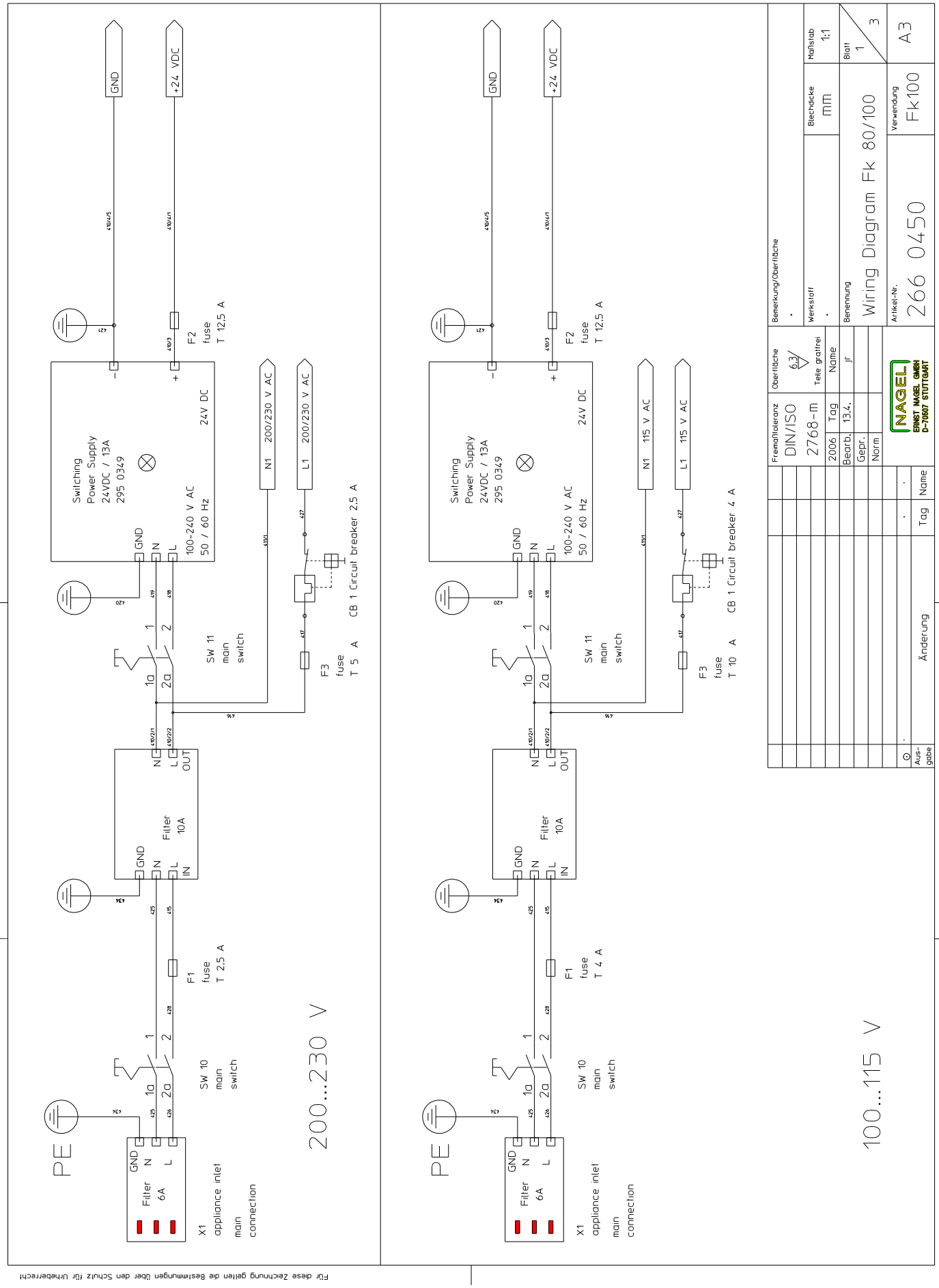
Layout of connectors on PCB



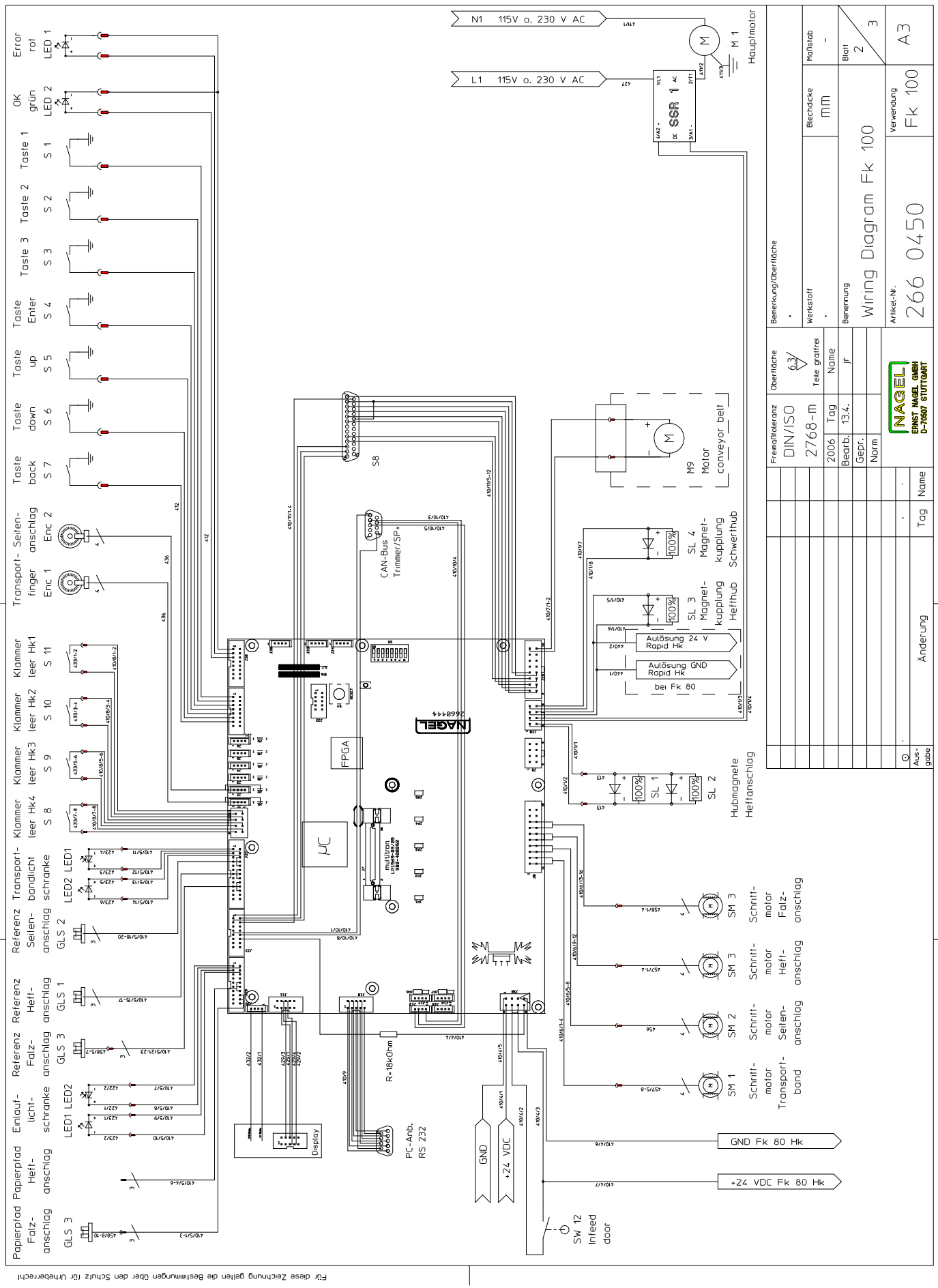
Adjustment data

Format				
Staple position				
Fold position				
Transport finger				
Side guide				
Staple stop				
Fold stop				

Circuit diagram



Für diese Zeichnung gelten die Bestimmungen über den Schutz für Urheberrecht



Für diese Zeichnung gelten die Bestimmungen über den Schutz für Urheberrecht

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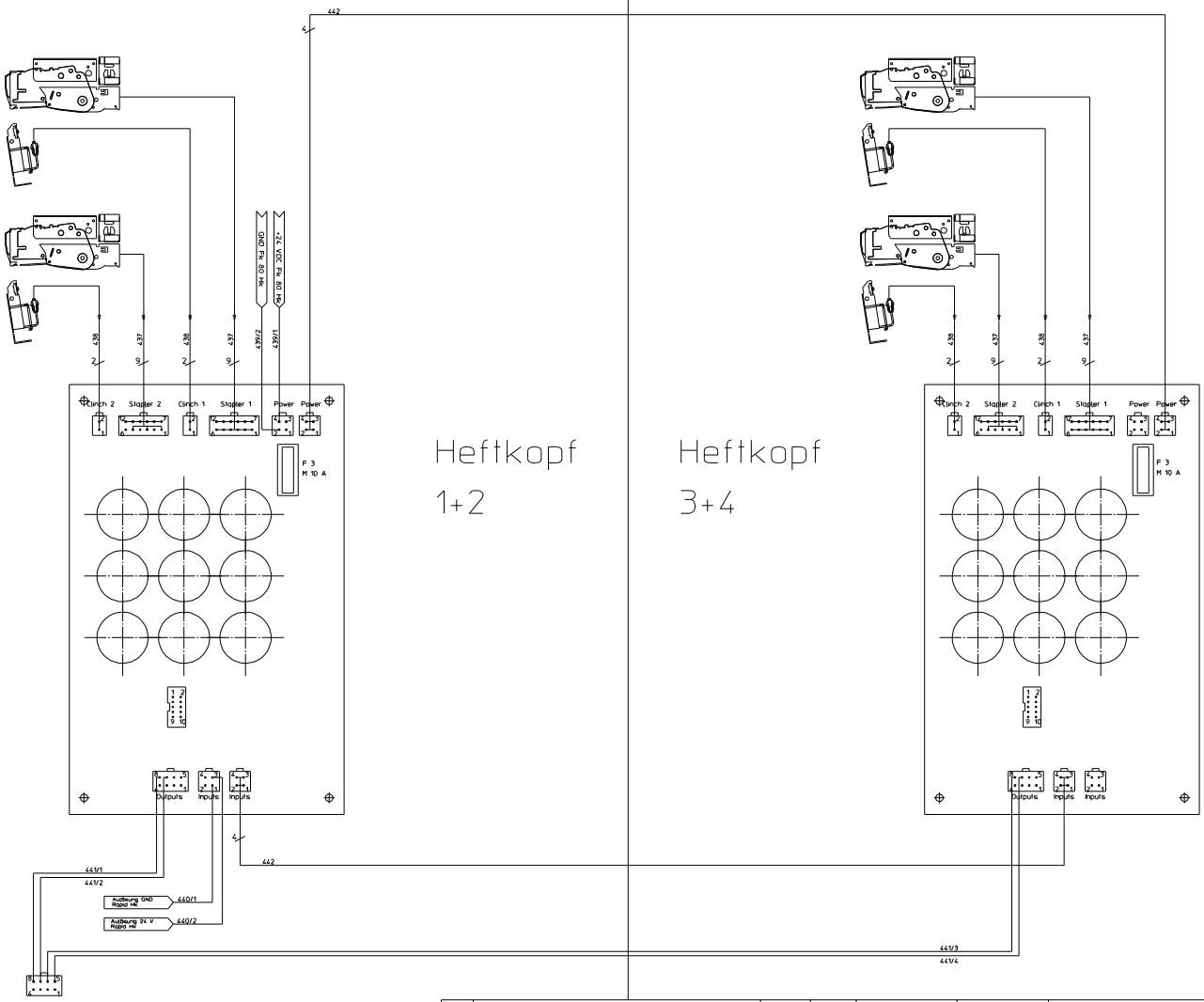
Für diese Zeichnung gelten die Bestimmungen über den Schutz für Urheberrecht



Stecker J26
Hauptplatine
2660444

				Freimaßtoleranz DIN/ISO 2768-m	Oberfläche 6.3 Teile gratfrei	Bemerkung/Oberfläche ·
				2006 Tag	Name	
				Bearb. 18.10.	jr	
				Gepr.		
				Norm		
⊙ Aus-gabe	· Änderung	· Tag	· Name	NAGEL ERNST NAGEL GMBH D-70507 STUTTGART		Werkstoff · / Blechdicke mm / Maßstab -
						Benennung Wiring Diagram Fk 80 / Blatt 3 / 3
						Artikel-Nr. 266 0450 / Verwendung Fk 100 / A3

KONFORMITÄTSERKLÄRUNG

DECLARATION OF CONFORMITY
DÉCLARATION DE CONFORMITÉ

Wir/ We/ Nous: **Ernst Nagel GmbH**
Breitwiesenstr. 21
70565 Stuttgart
Germany

erklären in alleiniger Verantwortung, dass das Produkt/
declare under our sole responsibility that the product/
déclarons sous notre seule responsabilité que le produit

Foldnak 80/100 – Trimmer 100

auf das sich diese Erklärung bezieht, in Übereinstimmung ist mit den Bestimmungen der EU Richtlinien/
to which this declaration relates is in conformity with the essential requirements of EEC directives/
auquel se réfère cette déclaration est en conformité avec les exigences essentielles des directives de la communauté européenne

89/336/EEC	und Änderungen/ and amendments/ et amendements
89/392/EEC	und Änderungen/ and amendments/ et amendements
73/23/EEC	und Änderungen/ and amendments/ et amendements

unter Anwendung der folgenden harmonisierten Normen/
by applying the following harmonized standards/
en appliquant les normes harmonisées suivantes

EN 60204-1	06.93
prEN 1010	10.99
EN 60950	08.92, + A1 + A2 + A3 + A4 + A11
EN 55022	09.98 Klasse B/ class B/ classe B
EN 55024	09.98
EN 61000-3-2	04.95 + A1 + A2 + A14
EN 61000-3-3	01.95

Jahr der Anbringung der CE-Kennzeichnung/
Year of affixing the CE marking/
L' an de l' application de la marque CE:

2006

Stuttgart, 15. März 2006

Ort und Datum/
Place and date/
Lieu et date

Geschäftsführer/
Managing Director/
Gérant

Glossary/ abbreviations

FK = Foldnak
FA = Foldnak actuator
FS = Foldnak sensor
GND = Ground
HxWxD = height x width x depth
IR = infrared
RF = RoboFeeder
RH = relative humidity
SH = stapling head
SSR = Solid state relay
TDC = top dead center
TA = Trimmer actuator
TS = Trimmer sensor
T-Finger = transport finger

History

Rev. 0.1 15.03.2006
Rev. 0.2 13.04.2006: Picture, Trimmer actuators
Rev. 0.3 13.06.2006: Page 11 FS32/33 in FS30/31
Rev. 0.4 02.08.2006: Trimmer new, many changes and additions, adjusted to layout of German Operations manual; software version FK 4.43
Rev.1 05.09.2006: pages 25-27 tables completed; p.7+13 paper format min. software version FK 5.xx, p.10 Maintenance and cleaning
Rev.1.1 11.09.06: p.18 booklet shears; p.15+28 alignment tool SH, Clincher-exchange, p.9 Sequence of switching on, p.5 Safety precautions 8, 16,17, 18
Rev.1.2 28.09.06: p.12 reattach the leaf springs; p.28 loop driver blade: + flat staples; flat driver blade: ~~ring and~~ flat staples; p.30 product …-Trimmer 100; clinch->clincher
Rev.1.3 23.10.06: p.30-32 inserted: circuit diagram page 1-3 (2660450); p.33 inserted blank page; p.28 Smallest format kit -> Parts for change to smallest format A6, + listing of parts

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